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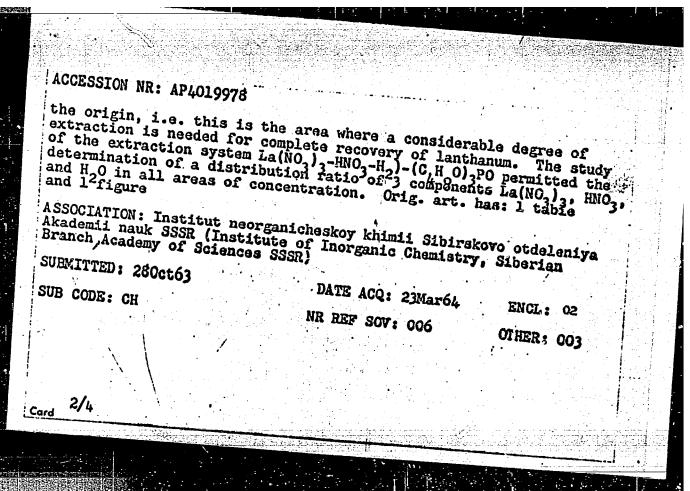
AUTHORS: Nikolayev, A.V. (Corresponding member); Kolesnikov, A.A.

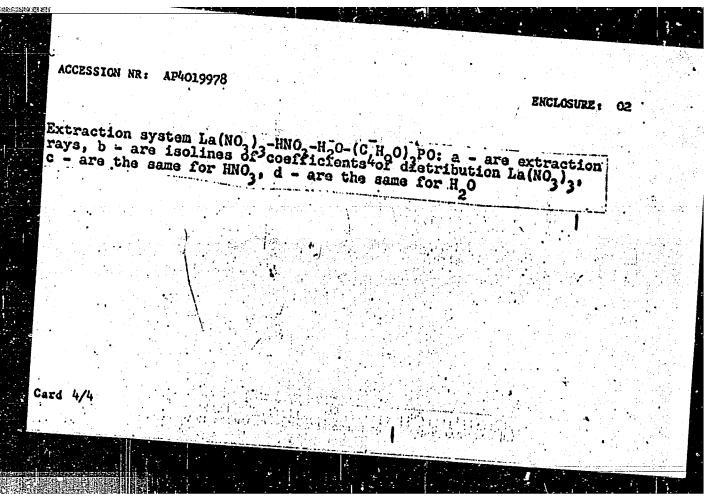
TITLE: Extraction system of La(NO₃)₃-HNO₃-H₂O-(C₄H₉O)₃PO at 25C

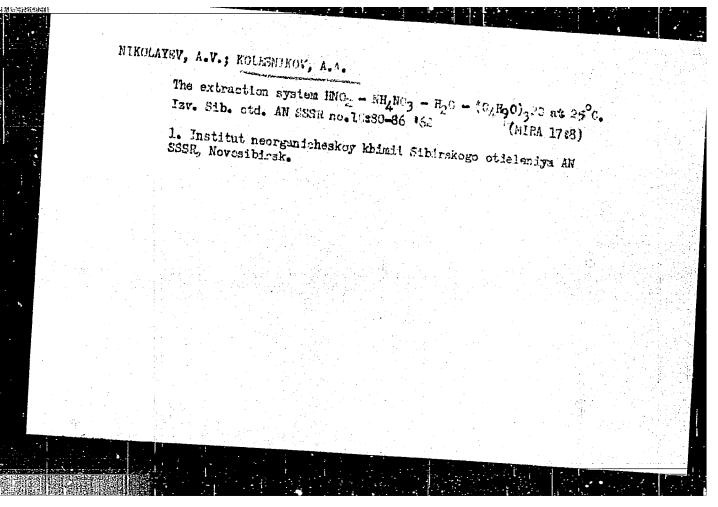
SOURCE: AN SSSR. Doklady*, v. 154, no. 6, 1964, 1395-1397

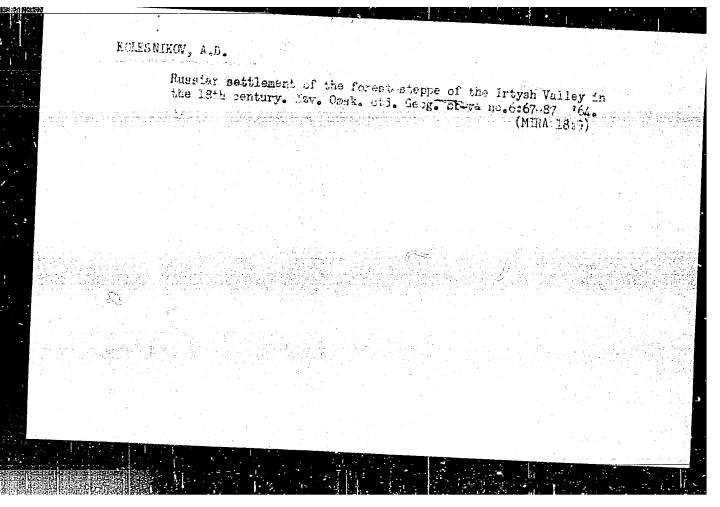
TOPIC TAGS: extraction system, La(NO₃)₃-HNO₃-H₂O-(C₄H₉O)₃PO, lanthanum, La(NO₃)₃, HNO₃, H₂O, lanthanum extraction

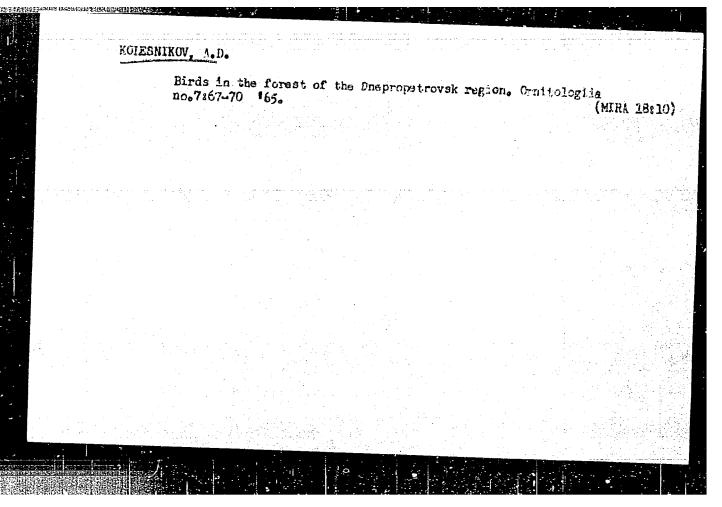
ABSTRACT: Experiments were carried out in isothermic conditions at Pmbil Chem-Ana (45 4, 102 (1956)), the water content in the Organic Akvametriya, L.-M., 1962, str. 68.) and nitric acid was determined by Fisher's method (Dzh. Mitchel, D. Smit alkali titration with methyl red indicator. The distribution ratio of the component of the system was determined like the relation of phase in water. (Fig1) The distribution ratio of lanthanum depends in the relation of components of equilibrium water phases, and changes Card 1/4

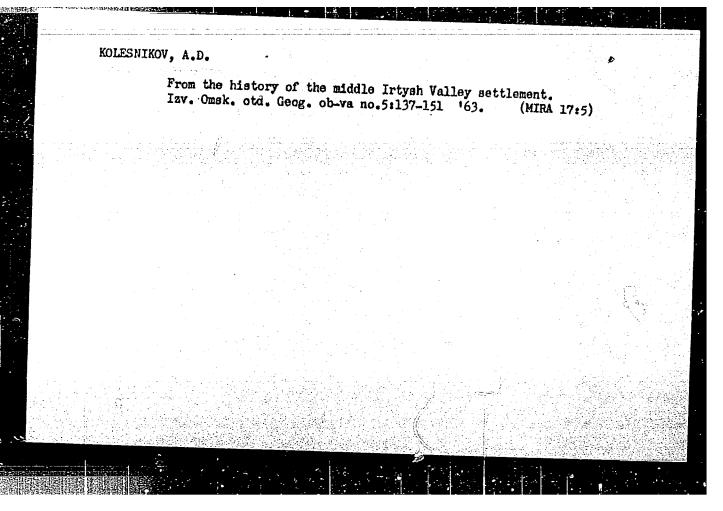


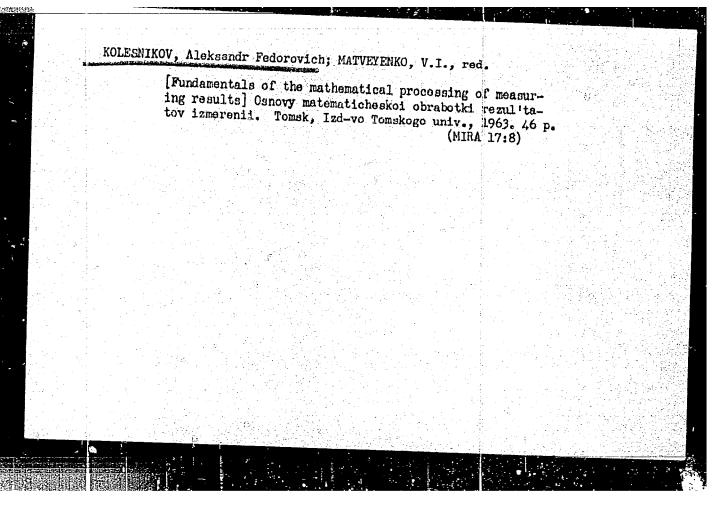


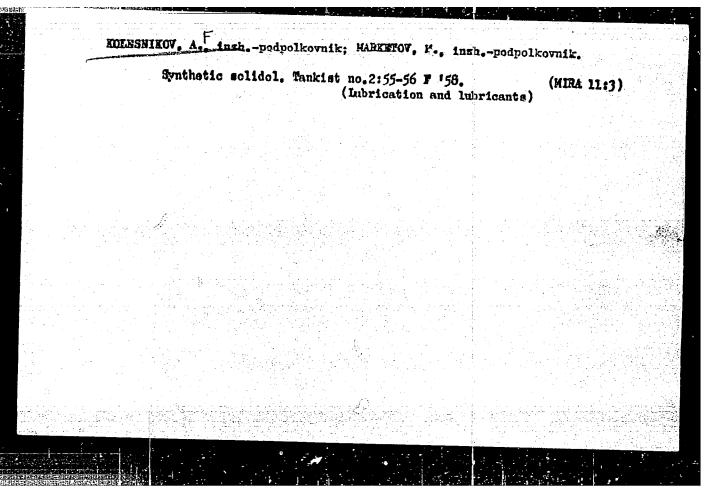


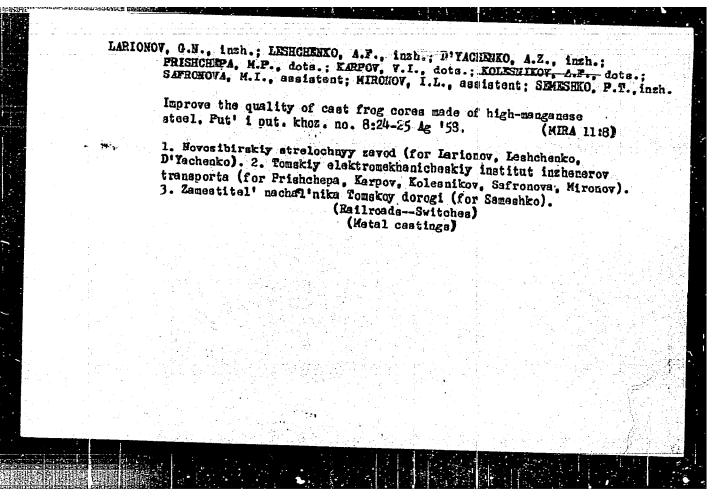












-5(4)

AUTHORS:

Prinhchepa, M. P., Karpov, V. I., Kolesnikov. A. F.

SOV/32-24-12-35/45

TITLE:

Machine for Testing Fetals for Wearing During Frictional Impact (Mashina dlya ispytaniya metallov na iznos treniyem

s udarom)

PERIODICAL:

Zavodskaya Laboratoriya, 1950, Vol 24, Nr 12,

pp 1512 - 1512 (USSR)

ABSTRACT:

For the machine described here the authors obtained patent Nr 112452. The previously known machines for testing frictional wearing with simultaneous dynamic loading do not reproduce the application conditions for the details tested. The machine described here comes very close to reproducing the working conditions of the building elements in railroad rails. The machine (Fig 1) consists of a driving part and a driven part. The former is a pair of wheels turned by the driving belt from an electric motor. One of the wheel rims is carefully ground and serves as a friction surface. The

driven section is a disk (thickness 30 mm, diameter 200 mm)

Machine for Testing Metals for Wearing During Frictional SOV/32-24-12-35/45

of hardened ShKh15 steel which can turn freely on a ball bearing. The disk is turned by the turning, polished wheel located on a weighted lever. The sample is placed in a groove in the disk rim and is thus exposed to the friction. In order that the sample will be prominent, a jump or impact is produced while the wheele is turning which depends upon the extent to which the lever is weighted and the distance which the sample protrudes out of the disk. Several kinds of steel with varying structures (st.5, 40Kh, G13L) (Fig 2) were investigated. There are 2 figures.

ASSOCIATION:

Tomskiy elektromekhanicheskiy institut inzhenerov zheleznodwahnogo transporta (Tomsk Electromechanical Institute of Railway Transportation Engineers)

Card 2/2

5/129/60/000/04/014/020 E073/E535

AUTHORS:

Prishchepa, M.P., Candidate of Technical Sciences, Karpov, V. I. Candidate of Phys-Mat. Sciences.

and Kolesnikov, A. F.

TITLE:

Change in the Properties of the Steel G13L During

Tempering \

PERIODICAL: Motallovedeniye i termicheskaya obrabotka metallov,

1960, No 4, pp 53-54 (USSR)

AESTRACT:

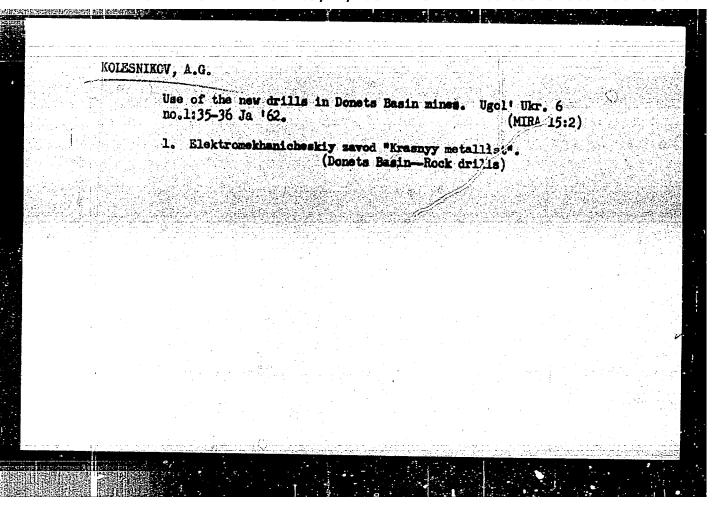
The authors investigated the influence of the tempering regime of the high manganese G13L steel on changes in some of its properties. The Works A produced this steel in electric furnaces, whilst the Works B produced it in open hearth furnaces. The compositions were as follows: A - 1.36% C, 14.27% Mn, 0.72% Si, 0.080% P, 0.013% S; B - 1.27% C, 12.40% Mn, 0.65% Si, 0.071% P, 0.018% S. A magnetic method of investigation was used, which was described in a paper by P. M. Yelchin (Ref 1). The obtained results are entered in the graphs, Figs 1 and 2 Card 1/2 and these show that heating up to 415°C does not bring

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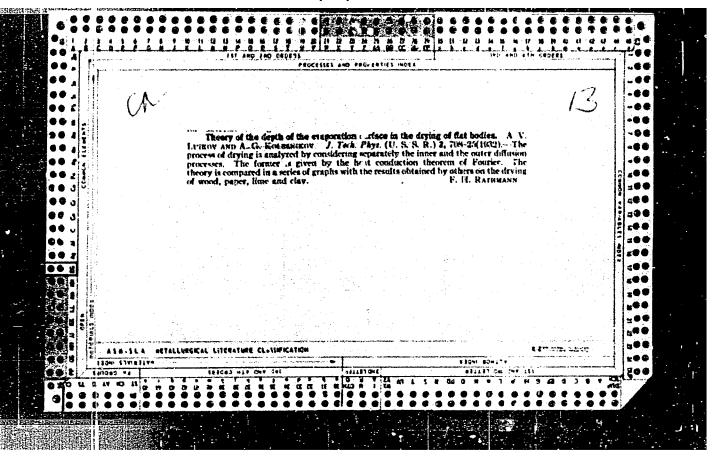
KARPOV, V.I.; KOLESNIKOV, A.F.; NIKITINA, A.K.; PRISHCHEPA, M.P.

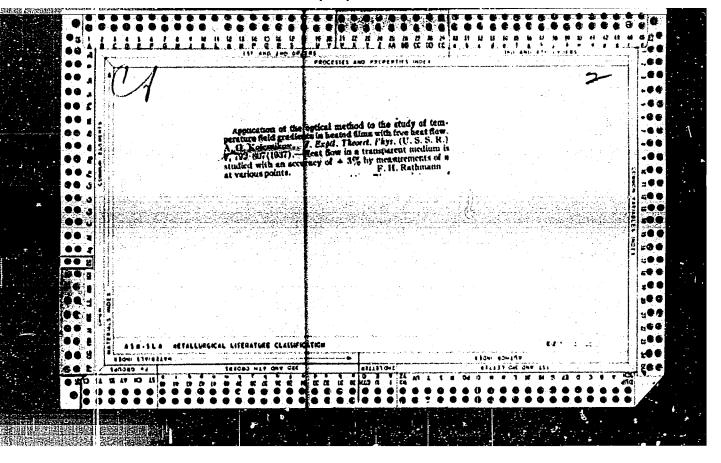
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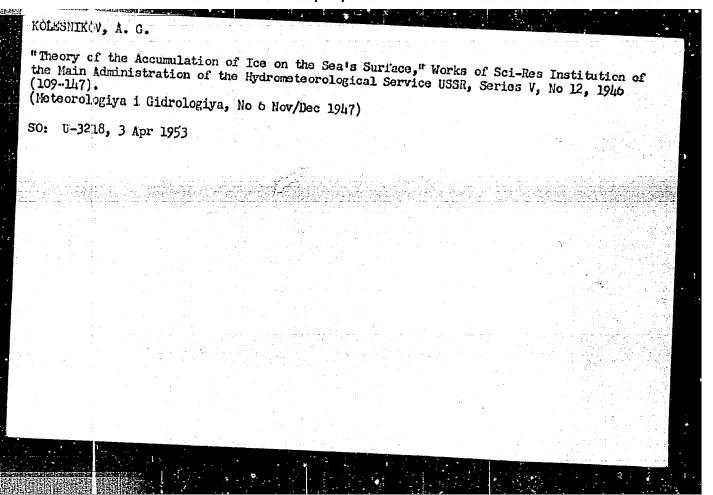
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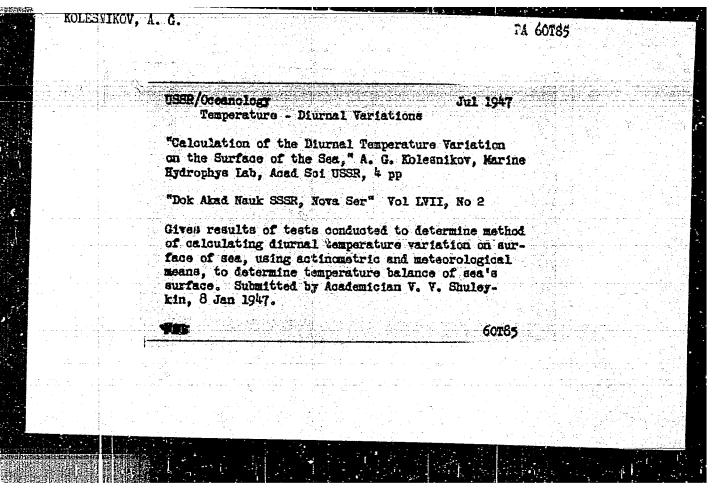


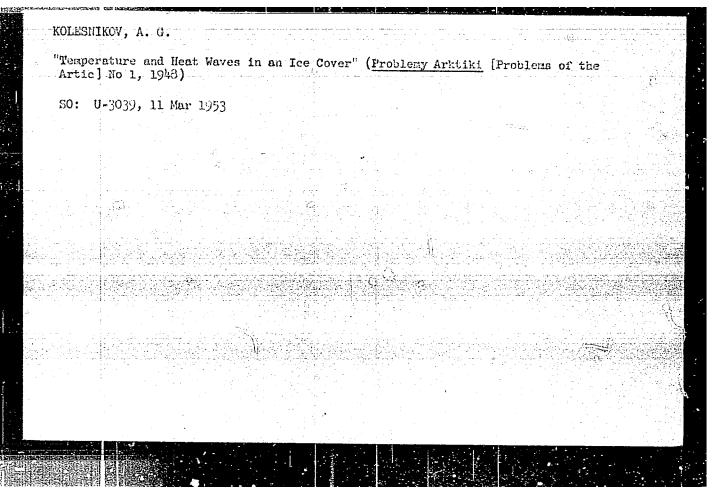
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ORG: Marin institut AN	e Hydrophysics I WkrSSR)	nstitute, AN UkrS	SR, Sevastopol' (Mo	orskoy gidrofiziches	kiy
TITLE: Dee	p current in the	Atlantic Ocean			
		, no. 2, 1966, 23			
OPIC TAGS: 記述 べるのい	ocean current,	asa water, ocean	ographic expedition	, two current mess	(133-
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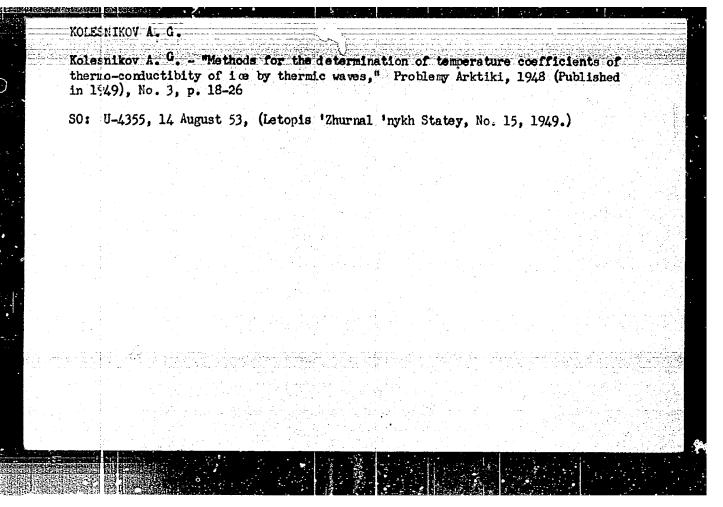




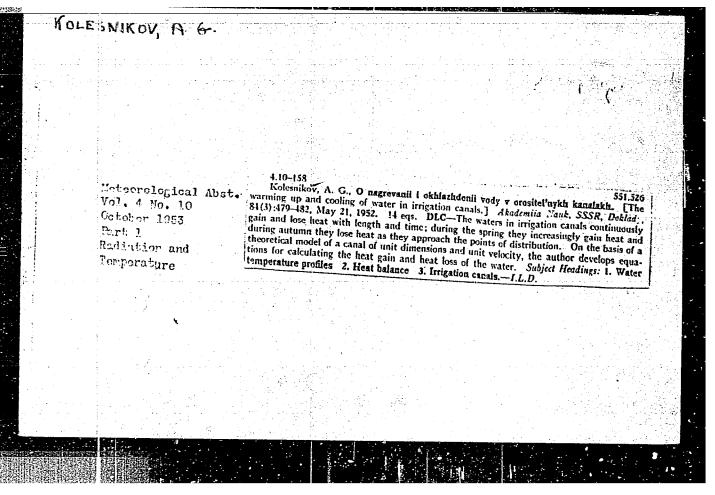


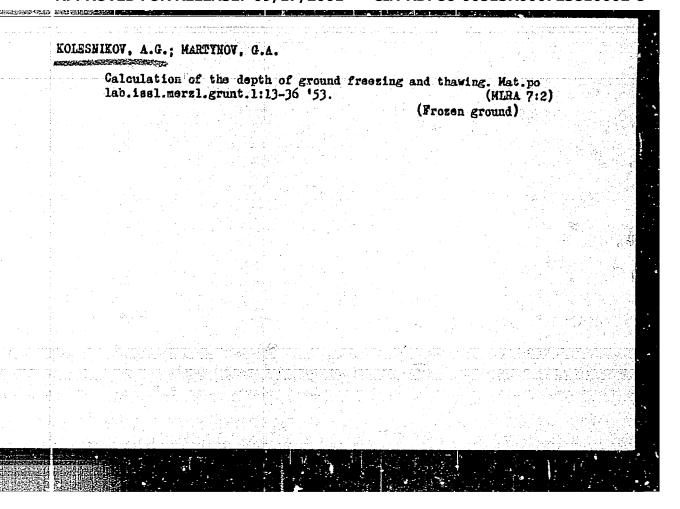


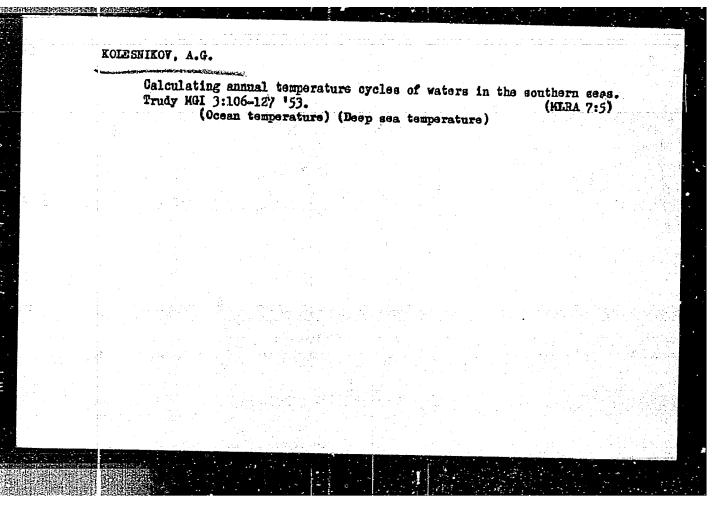


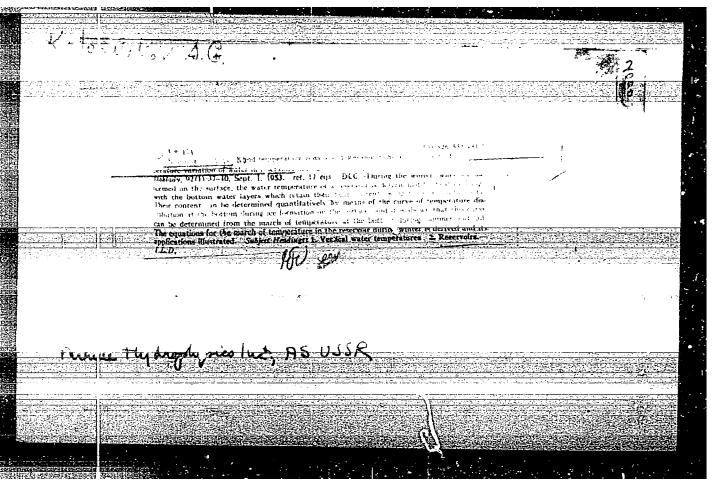


Meteorological Abst. Vol. 4 no. 3 Marca 1953 Radiation and Temperature	Kolesníkov, A. G., K izmeneniu matematicheskoi formulirovki zadachi o promerzanti grunta. [A modification of the mathematical formulation of the problem of soil freezing.] Akademia Nauk SSSR, Doklady, 82(6):889-891, Feb. 21, 1952. 3 refs., 9 eqs. MH-BH—At present, many investigations make the mistake of assuming that during soil freezing the water contained in the soil is transformed into ice. However, this is correct only for water in the free state, but combined water freezes later with significant decrease of soil temperature to below the freezing point. The increase of ice amount in the soil causes a decrease of specific heat of the soil and an increase of thermal conductivity of the soil. The author takes into consideration these peculiarities in the equations presented here. Subject Headings: 1. Soil freezing 2. Thermal conductivity 3. Soil temperatures 4. U.S.S.R.—N.T.Z.
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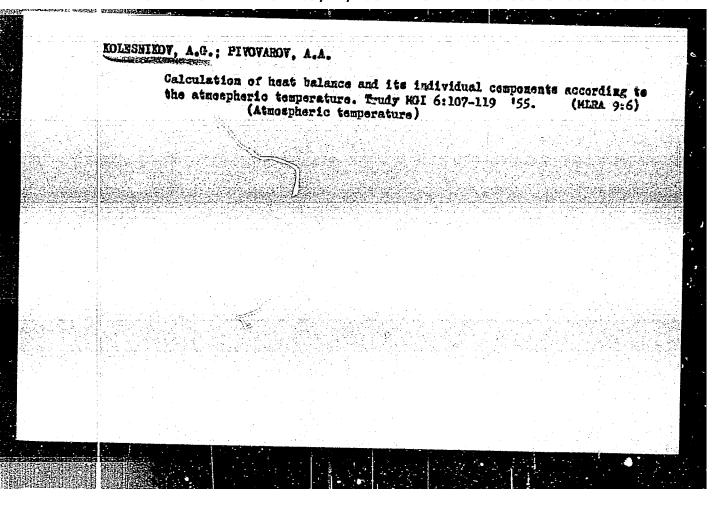
USSR/Geopl Card 1/1	ysics	- Sea temperatures
Author	•	Kolesnikov, A. G.
Title	· · · · · · · · · · · · · · · · · · ·	Calculation of the daily course of the temperature of the sea in accordance with the heat balance on its surface
Periodical	. :	Izv. AN SSSR, Ser. geofiz. 2, 190-194, Mar/Apr 1954
Abstract		Solves the problem concerning the daily course of the temperature of the sea
		from the known behavior of the heat balance on its surface. Assumes that the propagation of heat in the sea is effected by both turbulent and radiative exchange. In the description of the latter the author takes into account that absorption of radiation varies in the various portions of the spectrum. The solution obtained is correct for periods of a year when the layer of the density discontinuity is located below the depth of penetration of the daily temperature fluctuations. Two references, Soviet.
Institutio		the propagation of heat in the sea is effected by both turbulent and radiative exchange. In the description of the latter the author takes into account that absorption of radiation varies in the various portions of the spectrum. The solution obtained is correct for periods of a year when the layer of the density discontinuity is located below the density discontinuity.
Institutio Submitted		the propagation of heat in the sea is effected by both turbulent and radiative exchange. In the description of the latter the author takes into account that absorption of radiation varies in the various portions of the spectrum. The solution obtained is correct for periods of a year when the layer of the density discontinuity is located below the depth of penetration of the daily temperature fluctuations. Two references, Soviet.

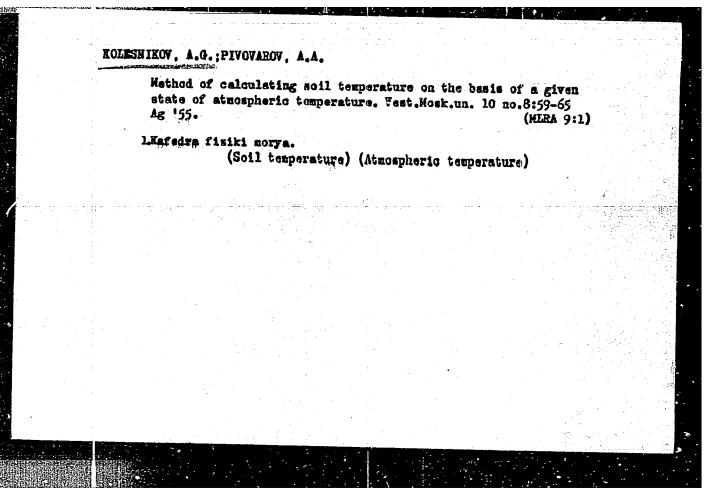
KOLEGNIKOV, A. G.

"Formation of the Temperature of the Sea During the Period of Autumn Cooling Trudy Mor. Gidrofiz. in-ta AN SSSR, 4, 1954, 3-14

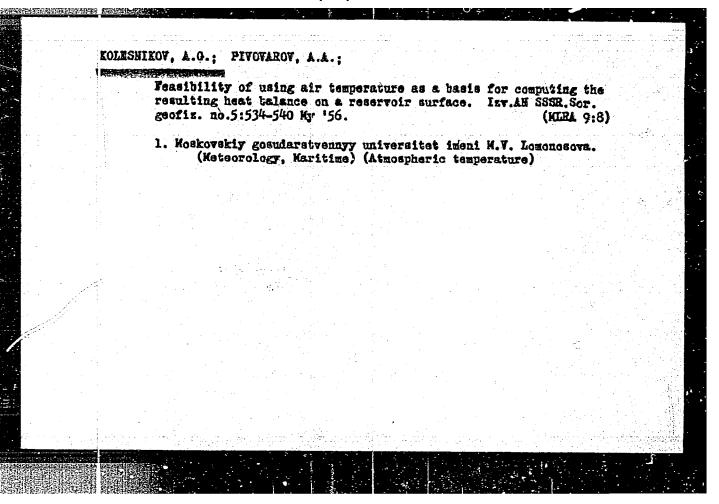
The author solves the problem of the distribution of the temperature of the sea according to depths in the active layer and the variation of this distribution in time during the period of autumnal cooling as a function of the yearly course of the elements governing the heat balance and currents. As the original quantitites considered given are: yearly course of total radiation I_0 , the effective radiation R_0 , evaporation W_0 , and the temperature of the air to and also the temperature of the water at the surface during the period of maximum summer heating t_m . The period of autumnal cooling is considered the time of lowering of water temperature from maximum summer heating until freezing. For the distribution of temperature deviations in the sea along the vertical from a certain mean value the author solves the following equation: $t_T = Kt_{zz} + (1-A) (bJ/cr)$ exp (-bz) -v t_x , where T is the time, z is the depth, v_x is the velocity of flow in the x direction. The solution of this equation is given by a complex formula consisting of the sum of three polynomials. (RZhGeol,

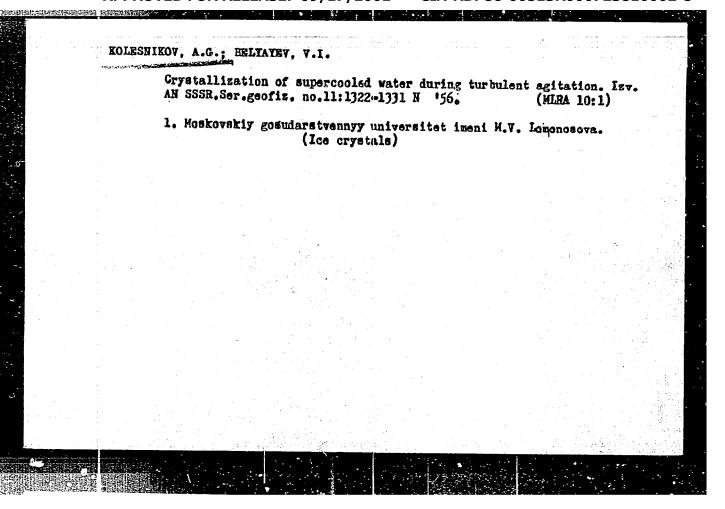
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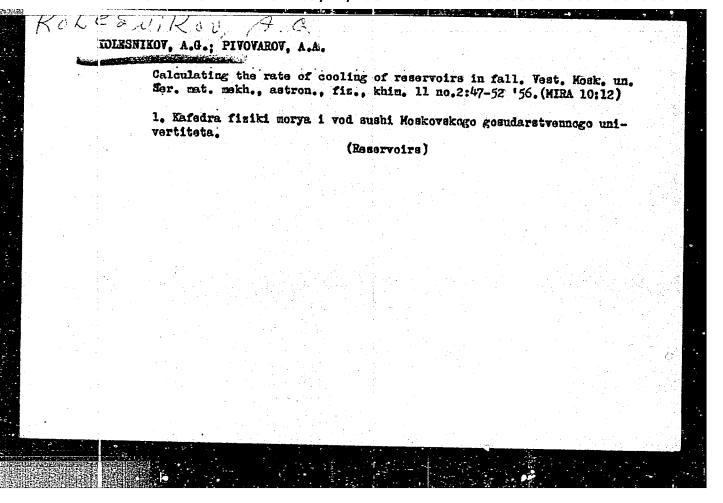


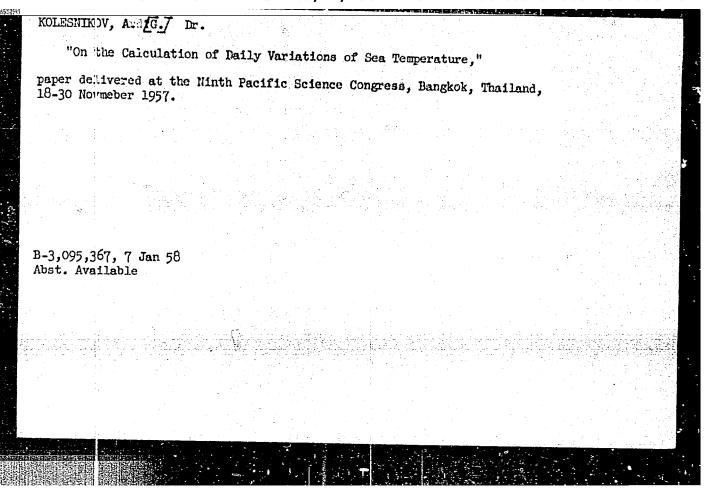


KOLESKIKOY, A.GO USER/Grophysics - Hydrophysics Card 1 1 Pub. 22 - 18/59 Authors Moleanikov, A. G., and Pivovarov, A. A. was the street with the 72500 . Calculation of the daily temperature variation of a soa by the total radiation and temperature of the air Feriodi al SSSR 102/2, 261-264, May 11, 1955 Abstraci A mothod is described for determining the doily temperature variation of a sea by taking into consideration only the daily variations of the air temperature at a certain altitude and the total radiation of the sea surface and considering the sea surface albedo and thermal characteristics of the water and air. Two USSR references (1947-1954). : Acad. of Sc., USSR, Marine Hydrophysics Institute 10301°45161 y : Academician V. V. Shuleykin, February 9, 1955









NULLONINUV, A.C.

AUMHORS: Berezin, S.I. and Kolesnikov, A.G. (Engineers). 114-7-14/14
TIME: On the production of equipment for hydro-electric power stations by the French firm Neyrpic. (O proizvodstve oborudov-aniya dlya gidroelektrostantsiy Frantsuzskoy firmoy Neyrpik.)
PENIODICAL: "Energomashinostroyeniye" (Power Machinery Construction)

.1957, No.7, Vol.3, pp.37-40. (U.S.S.R.) Neyrpic is described as one of the leading French firms ABISTRACT : manufacturing modern equipment for hydro-electric power stations. Although it holds no records for size or quantity of output of water turbines the firm is of interest to Soviet readers because of its great experience. The description given in the article was obtained during the course of a visit and from material published by the firm. A brief history of the firm is given with an account of the type of equipment produced. The main shops and services of the Grenoble works are described briefly. Special mention is made of the importance attached to experimental investigations. This includes a brief account of the hydraulics laboratory. The last part of the article describes some special features of production and the development of new designs of turbine. Special mention is made of the accuracy of workmanship which makes it largely possible to do away with preliminary assembly for purposes of verification. Attention is drawn to the 1/2 extensive use of welding and to the use of plastic labyrinth

KOLESNIKOV, A.G.

AUTHORS:

Vovchenko, G.D., Professor Kolesnikov, A.G., Professor

26-10-6/44

TITLE:

Contribution of the Scientists of the Metropolitan University (Vklad uchenykh stolichnogo universiteta)

PERTODICAL:

Prirode, October 1957, No 10, pp 49-52 (USSR)

ABSTRACT:

Scientists of the Moscow State University contribute to the International Geophysical Year by working on 19 different scientific problems. Members of the faculty of physics study the composition of atmospheric ozone in different altitudes, observe the aurora borealis from special stations in the Arctic and study the structure of the ionosphere. Important research work is conducted in the field of microseisms. As such observations require very sensitive appliances, the faculty of physics had to develop special measuring devices: a sea turbulimeter and a radioactive turbulimeter, the first of their kind in the world. The study of cosmic rays is conducted by the Institute of Physics at Moscow University. The Institute of Astronomy imeni P.K. Shtermberg in cooperation with the Time Service of the Institute are collecting data that will permit better and more exact determination of time. Astrophysicists of the Institute conduct observations of the

Card 1/2

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3(7) COLESNIKOU, A.G. PHASE I

PHASE I BOOK EXPLOITATION.

SOV/2131

Akademiya nauk SSSR. Morskoy gidrofizicheskiy institut

- Termika morya. Khimiya morya (Thermal Regime of the Sea. Chemistry of the Sea) Moscow, AN SSSR, 1958. 145 p. (Series: Its: Trudy, tom 13) Errata slip inserted. 1,300 copies printed.
- Resp. Ed.: A.G. Kolesnikov, Doctor of Physical and Mathematical Sciences; Ed. of Publishing House: L.K. Nikolayeva; Tech. Ed.: N.F. Yegorova.
- PURPOSE: This collection of articles is intended for geophysicists, hydrophysicists, and oceanographers.
- COVERAGE: These articles deal with problems in the physics and chemistry of sea water. Individual papers treat the turbulent thermal conductivity and heat exchange in sea water, the pulsations in air temperature, the salinity of the Black Sea, the determination of calcium, magnesium, and copper in sea water, and the determination of sodium in atmospheric precipitates. Figures, tables, and graphs accompany the articles. There are 121 references: 92 Soviet, 18 English, 8 German, 2 French, and 1 Swedish.

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Card 3/4		
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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R000723810002-8"

3(7) AUTHORS:

Kolesnikov, A.G., and Belyayev, V.I.

SOV/155-58-2-42/47

TITLE:

On the Crystallization of a Super cooled Cloud on Interspersed Artificial Sublimation Centers: (0 kristallizatsii pereokhlazhdennogo oblaka na iskusstvennykh yadrakh sublimatsii, vvedennykh v nego

putem zaseva)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Fiziko-matematicheskiye nauki, 1958, Nr 2, pp 200-203 (USSR)

ABSTRACT:

The authors consider the isothermic crystallization of a cloud consisting of water vapor and water drops cooled to ca. -10°C, the microstructure of which is independent of the local coordinates, and in which to a given moment a large set of sublimation kernels is interspersed. The authors establish a system consisting of six equations out of which the number of appearing crystals, the vapor concentration, and other characteristics of the sublimation process can be obtained as functions of the time.

There is 1 figure, and 3 references, 2 of which are Soviet, and

1 American.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova (Moscow State University imeni M.V. Lomonosov)

SUBMITTED: Card 1/1

January 15, 1958

Koles Nikow. A.G., 49-58-3-16/19

AUTHORS: Kolesnikov, A.G., Panteleyev, N.A., Pyrkin, Yu.G., Petrov, V.P., and Ivanov, V.N.

TITLE: Apparatus and Methods of Measuring Micro-Pulsations of Temperature and Flow-Rate in the Sea (Apparatura i metodika registratsii turbulentnykh mikropul'satsiy temperatury i skorosti techeniya v more)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya, 1958, Nr 3, pp 405-413 (USSR)

ABSTRACT: The instruments usually employed in measuring temperature, etc., in the sea have so long a period that they only measure averages. For the study of turbulent processes (e.g., sure averages. For the study of turbulent processes (e.g., sure averages. For the study of turbulent processes (e.g., sure averages. For the study of turbulent processes (e.g., sure averages. For the study of turbulent processes (e.g., sure averages.) It is necessary to turbulent heat flow, viscosity, etc.) it is necessary to turbulent processes the measurements. The measurements of the actual temperature difference between the actual and the average temperature. The whilst the latter measures also the actual temperature. The whilst the latter measures also the actual temperature. The liebermann (1951), Kontoboytseva (1958) and English (1953) on Liebermann (1951), Kontoboytseva (1958) and English (1953) on temperature measurements, and ones by Bowden and Fairbairn (1952, 1956) and Obukhov (1951) on rate-of-flow measurements. The The authors then discuss the basis of a new apparatus. The

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Apparatus and Methods of Measuring Micro-Pulsations of Temperature and Flow-Rate in the Sea.

time constant must be less than 0.1 sec for the whole apparatus. The accuracy of measurement of temperature in a sea where the surface is ice-free must be ~0.001-0.005°C; if ice is present the required accuracy goes up to 0.0001°C. The accuracy of velocity measurements must be not less than 2-5 mm/sec for an ice-free sea and not less than 0.1 mm/sec for a sea shielded from wind effects by ice. To obtain correct recordings with the required accuracy, the whole apparatus must be stationary. The authors now describe their actual apparatus. The meter consists of measuring devices at two different levels, a distributing and balancing network, an amplifier and an oscillograph. The measuring device at the upper level has three constituents: for measuring true velocity, true temperature, and the modulus of the velocity vector and the vertical component of the velocity vector. At the lower level, true velocity and true temperature are measured. Hence the meter records simultaneously: average temperature, the gradient of the average temperature; temperature pulsations average velocity and the

Card 2/5

Apparatus and Methods of Measuring Micro-Pulsations of Temperature and Flow-Rate in the Sea.

gradient of the average velocity, pulsations of the modulus of the velocity vector and pulsations of its vertical component. Velocity signals go straight to the oscillograph; whilst temperature signals go to the oscillograph via a Wheatstone bridge and an amplifier. Power is supplied by the constant current from an accumulator. Temperature measurements were carried out with a thermistor with a temperature coefficient of resistance of 3-4% and a period of 0.08 sec. This was placed in one arm of the Wheatstone bridge. The power supplied to the thermistor was so chosen that the desired accuracy of 0.001 C could be obtained. Small deviations from the average velocity give diminished thermistor readings if the electric current is diminished or the average velocity increased. The device for measuring the average flow velocity consists of a 0.1 mm diameter, 28 mm long platinum wire, which is included in a bridge system. The wire is stretched perpendicular to the stream flow. Measurements are made at a constant current of 1-5 amps depending on the velocity. The device for measuring the modulus of the velocity vector and of the vertical component has two Card 3/5

Apparatus and Methods of Measuring Micro-Pulsations of Temperature and Flow-Rate in the Sea.

angles to each other; their bisector is in the direction of the current and lies in the vertical plane. Vertical components of flow are measured by the resultant asymmetry of the system with respect to the flow. The meter altogether consists of two parts, both of which are attached to different parts of a steel cable at a vertical distance apart of from 0.5 to 2.0 m. The basic part (which can move freely round a vertical axis) is at the top. A vane keeps the apparatus oriented into the current. The measuring elements are placed at the front to reduce the effect of disturbance. All but 5-6 mm of the thermistor are enclosed in an ebony casing from which leads run back through a tube to the centre of the apparatus. A lead counterweight is employed to keep the meter horizontal. The measuring elements are protected from mechanical damage by a wire grid. The temperature measurer was graduated in the interval 5.0-30.0 C with a Beckmann thermometer for different currents in the thermistor. The velocity measurer was graduated in the range 0-50 cm/sec.

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Apparatus and Methods of Measuring Micro-Pulsations of Temperature and Flow-Rate in the Sea.

The instrument is let down from a winch. After it has been kept at the right depth for 3-5 minutes the oscillograph is switched on and measurements are made. The authors give examples of oscillograms obtained and their interpretation. They assert that the meter seems well adapted for measurements on turbulence. There are 11 figures and 7 references, of which 5 are English and 2 Russian.

ASSOCIATION: Moscow State University imeni M.V. Lomonosov (Moskovskiy gosudarstvennyy yniversitet im. M.V. Lomonosova)

SUBMITTED: March 19, 1957.

AVAILABLE: Library of Congress.

Card 5/5

30-58-4-17/44

AUTHORS:

Grabovskiy, V. I., Professor; Kolesnikov, A. G., Professor; Ivanov, A. A., Doctor of Physical and Mathematical Sciences

TITLE:

Research Done During the Expedition of the "Mikbeil Lomonosov" (Ekspeditgionnyye issledovaniya na sudne "Mikhail Lomonosov") Hydrofiysics in the Atlantic (Gidrofizicheskiye raboty v Atlanticheskom okeane)

PERIODICAL:

Vestnik Akademii Nauk SSSR,1958, Nr 4,pp.86-90(USSR)

ABSTRACT:

The present investigations of oceans and seas show that their most essential processes are dependent on the thermal and dynamic interaction of the ocean and the atmosphere. Therefore the main interest is directed to the investigation of the heat exchange processes between atmosphere and ocean, to the distribution of heat in quantities of water as well as to the formation of streams and waves. Then the authors report in detail on the future research within the frame of the program of the International Geophysical Year. According to a decision of the Committee for the execution of the works of the MGG the investigations in the North Atlantic are to be carried out by the scientific research ships "Mikhail Lomonosov"

Card 1/3

30-58-4-17/44

Research Done During the Expedition of the Mikhail Lomonosov. Hydrophysics in the

Atlantic

(Figure 1), "Ekvator" and "Sevastopol". The "Mikhail Lomonosov" was built in the "Neptun" ship yards in Rostok (DDR), it has a displacement of 6000 t and can also be used for works in ice. Its deck was made longer and a landing place for helicopters was incorporated. The ship has special devices and equipment, among others a deep-sea hoist for anchoring down to 15000 m, 8 hydrologic hoists of the "Okean"--type down to 4000 m, 3 echosonic fathometer automatic recorders downtal 2000 m, 1 echosonic fathometer of the "Lodar"--type for vertical and horizontal probing. Then a workshop for experiments and 16 laboratory rooms are installed aboard the ship. The average speed of the ship is 13 knots and it has an operating range of about 11000 miles. The maiden voyage was made for testing the equipment of the ship (Figure 2). But also a number of works of general kind were carried out. Also a group of German scientists under the direction of Doctor E. Bruns took part in this expedition. The second voyage is shown in Figure 3 and is supposed to include the collaboration of all three ships. The main oceansgraphic work of this voyage will be carried out according to the plan by the MGG, which is further detailed. The "Mikhail Lomonosov" started on this voyage which will last 4 months

Card 2/3

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SOV/155-58-4-32/34 3,5000 Kolesnikov, A.G. Belyayev, V.I. On the Calculation of the Rate of Crystalline Growth of an AUTHORS: Undercooled Cloud Under Influence of Hard Carbonic Acid Gab TITLE: (K raschetu skorosti kristallizatsii pereckhlazhdennogo oblaka pri vozdeystvii na nego tverdoy uglekislotoy) Wandward deklady vysshey shkoly, Fiziko-matematicheskiye nauki, 1958, Mr 4, pp 199 - 206 (USSR) PERIODICAL: The authors propose to calculate the process of artificial crystallization of a cloud under an influence of CO2 on the ABSTRACT: basis of the following simple scheme : The process is understood as a diffusion of ice particles arising under the influence of hard carbon digride, and as the distillation of water from the drops on the ice crystals. The calculation according to this scheme is carried out under the simplest assumptions (horizontal, thin, infinite cloud; linear diffusion of CO2 etc). It is proposed to verify experimentally the obtained formulas in order to obtain indications for those facts which are not taken into account in the Card 1/2

SOV/155-58-5-19/37 Kolesnikov, A.G., Belyayev, V.I. 3(7) On the Calculation of the Rate of Crystalline Growth of a AUTHORS: Supercooled Cloud Under Influence of Ice-Forming Particles TITLE: Rauchnyye doklady vyashey shkoly. Fiziko-matematicheskiye nauki, 1958, Nr 5, pp 102-107 (USSR) PERIODICAL: The paper consists of an introduction (section 1) in which the author refers aspecially to the papers of V.Ya.Nikandrov, ABSTRACT: G.M. Bashkirova, P.N. Krasikov and others, and of 2 further sections. In section 2 he considers the onedimensional problem analogously to / Ref 11 7: In the starting moment the ice-forming particles are in a vertical plane and then diffuse in horizontal direction, whereby simultaneously crystals are formed on them. For the steam influx to the crystals the author obtains w by similar considerations as in [Ref 11], where Card 1/ 3

On the Calculation of the Rate of Crystalline Growth SOV/155-58-5-19/37 of a Supercooled Cloud Under Influence of Ice-Forming Particles

r₃ magnitude of the particle. In section 3 the author tries to extend the obtained results to the two-dimensional case occurring in natural situations.

There are 13 references, 8 of which are Soviet, 2 English, 2 Japanese, and 1 American.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova (Moscow State University imeni M.V. Lomonosov)

SUBMITTED: May 8, 1958

AUTHORS: Kolesnikov, A. G. and Belyayev, V. I.

TIME: The Crystallization of Super-cooled Water Clouds by Freezing of Drops (O kristallizatsii pereokhlazhdennogo vodnogo oblaka putem zamerzaniya kapel')

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya, 1958, Nr 5, pp 636-642 (USSR)

ABSTRACT: Ref.1 considers the process of crystallization of supercooled water vapour when crystals arise on sublimation nuclei.
This would occur in seeding experiments, but in natural processes it is more likely to occur by freezing of the water
droplets. It is assumed that the cloud is homogeneous (i.e.,
the functions used do not depend on coordinate) so that calculations can be made per unit volume. At the start the cloud
consists of water vapour and drops in dynamic equilibrium. It
is assumed that at a certain time, due to a change in temperature, etc., metastability occurs. This moment is taken as the
onset of crystallization. Since the saturation vapour pressure
is lower over ice than water, the ice crystals grow at the
expense of the water vapour. This loss of water vapour causes
the unfrozen drops to evaporate and the process continues till
the whole cloud has frozen. The freezing process occurs almost
Card 1/9instantly that a seed crystal appears. The probability of

The Crystallization of Super-cooled Water Clouds by Freezing of Drops.

appearance seed crystal in unit volume of fluid is a function of temperature (Ref.2). Taking the process to be isothermal, the probability of freezing is proportional to the volume. Thus, if n' drops freeze/unit time from n drops (the same size) then: n' = β vn (1) where β = const, v is the volume of a drop. Since the initial dimensions of cloud droplets are small and crystals at this stage do not grow to a large size, the evaporation of drops and the growth of crystals can be considered to be controlled by molecular diffusion of water vapour. To describe this change Maxwell's equation is used for drops (Eq.2) and crystals (Eq.3). (Where r_1 is the radius of a drop; v_1 is the vapour concentration corresponding to equilibrium of vapour and drops; r_2 and v_2 are the same quantities for a crystal; D is the molecular diffusion coefficient for the vapour; ρ_1 and ρ_2 are the densities of water and ice; v_1 is the vapour concentration in the absence of drops and crystals) v_1 and

Card 2/9

The Crystallization of Super-cooled Water Clouds by Freezing of Drops.

uo are considered constant. Since at the initial moment. the drops are in equilibrium with the vapour, therefore $u(0) = u_1$. If the radius of the drops at this moment is then its radius at any later moment will be given by Eq.(2) with the boundary conditions Eq.(4). This gives Eq.(5). This indicates that drops can be divided up according to their initial radius - drops between R_1 and $R_1 + dR_1$ will remain similar all their lives and will disappear at the same time t'. Thus the behaviour of each group can be calculated separately and the final result got by summing. Let the initial distribution be described by the function Then the number of drops at the initial moment in $\varphi(R_1)$ such a group is: φ(R₁)dR₁ $f_1(\tau, R_1)$ so that the number of Extend the function to drops in the range $(R_1, R_1 + dR_1)$ at any moment τ is equal to: $f_1(\tau, R_1)dR_1$ (7)

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The Crystallization of Super-cooled Water Clouds by Freezing of Drops.

From Eq.(1) we have the number of drops in unit time, from this group, which turn into crystals (Eq.8). Using Eq.(6), it is found that $f_1(\tau R_1)$ can be expressed by an integral equation, which is most conveniently expressed in the form Eq.(9). At a certain moment τ' the considered group disappear as a result of evaporation. At this moment R_1 is given by Eq.(10) from Eq.(5). Eq.(10) permits the initial radius to be expressed in terms of the moment of disappearance of the drop $(R_1 = Z(\tau'))$. To distinguish one group of similar drops from another group, the initial radius of the drop is used. Crystals must be defined by two parameters: R_1 defining the drops from which they arise and τ'' the moment of freezing of the drop. The description of the crystallization process in terms of these two variables is analogous to the problems of hydrodynamics in Lagrangian variables. A function $f_2(\tau'', R_1)$ is introduced so that

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The Crystallization of Super-cooled Water Clouds by Freezing of Drops.

initial radii in the range R_1 to $R_1 + dR_1$ is equal to $f_2(\tau^*, R_1)dR_1$. The number of crystals formed per unit time from this group is given by Eq.(11). Considering next the equation for the change in concentration of vapour $u(\tau)$ during crystallization, this change/unit time will be equal to the difference between the total vapour flow from the evaporating drops and total vapour flow to the growing crystals, Eq.(12). (P_1 is the vapour flow from the drops; P_2 is the vapour flow to the crystals). P_1 is first found (Eq.13) and then P_2 . This latter can be obtained by integrating Eq.(3) with the boundary conditions (Eq.14), giving Eq.(15) which represents the radius of the crystal as a function of $r_2(\tau, \tau^*, R_1)$. Eq.(16) gives the flow to a crystal arising at the moment τ^* . At τ^* only those drops can freeze for which $R_1 > Z(\tau^*)$ [$\tau^* = \tau^*$]. Therefore Eq.(16) is integrated for R_1 between the limits $Z(\tau^*)$ and R_1

The Crystallization of Super-cooled Water Clouds by Freezing of Drops.

Eq.(17) for P_2 is obtained. Eq.(12) can be written in the form Eq.(18), using Eqs.(13) and (17). Thus five equations (Eqs. 5, 15, 9, 11 and 18) have been obtained for five unknowns r_1 , r_2 , n_1 , n_2 and u, which can therefore be found and hence the crystallization process studied. The initial boundary conditions for the system are that: $u = u_1$, $f_2 = 0$ when $\tau = 0$; $\tau^n = 0$. Eliminating r_1 , r_2 , f_1 and f_2 from Eq.(18) by use of the other equations, an equation for u is obtained which can be written in the form Eq.(19) (where Φ is a function of $u(\tau)$ depending on the value of u in the range $[0, \tau]$, Eq.(19) can be solved by a numerical method which is discussed below. Taking a small value of u is calculated linearly in the region $[0, \tau_1]$ and u du/du for the point u is calculated from Eq.(19). The process is then repeated until the final value of u is found. Once u has been found, the other unknowns can be easily

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The Crystallization of Super-cooled Water Clouds by Freezing of Drops.

determined. Assuming these solutions are Eqs. (20), (21), (22) and (23), then, firstly, it is possible to determine the overall number of drops $n_1(\tau)$ and crystals $n_2(\tau)$ in the cloud at any time and, secondly, to determine the density of distribution by dimensions $v_1(\tau, r_1)$ and $v_2(\tau, r_2)$ at any time - these functions can be found from experiments comparatively easily. The functions $n_1(\tau)$ and $n_2(\tau)$ are obtained from the definition of the functions f_1 and f_2 . $v_1(\tau, r_1)$ and $v_2(\tau, r_2)$ are obtained by considering a group of drops the initial dimensions of which lie in the range of drops in this group at the moment τ is $g(\tau, R_1)dR_1$, which, using Eq.(24) becomes: $g(\tau, R_1) \frac{dr_1}{\partial p(\tau, R_1)}$

Card 7/9 Eq.(25) gives the number of drops at time T with dimensions

The Crystallization of Super-cooled Water Clouds by Freezing of Drops.

in the range [r, r, + dr, From Eq. (22) it is possible to find $R_1 = S_1(r_1, \tau)$ as follows from Eq.(5). Substituting in Eq. (25) gives $\gamma_1(\tau, S_1(r_1, \tau)) = \gamma_1(r_1, \tau)$. At , drops with initial dimensions in the range $[R_1, R_1 + dR_1]$ freeze. If the crystals which arise from these at time t are to have dimensions in the range . the conditions Eq.(26) and Eq.(27) on R_1 and dR₁ must be imposed (where S₂ is determined from Eq.(23)) The number of crystals (arising at a time $\tau^* < \tau$ in an interval dt) with dimensions at t in the range $[r_2, r_2 + dr_2]$ is equal to Eq.(28) (where R_1 and dR_1

defined by Eqs. 26 and 27). The differential with respect to t" in this expression, after substituting Eq. (26) for R1,

Card 8/9

SOV/ 49-58-11-8/18

AUTHORS: Kolesnikov, A. G. and Speranskaya, A. A.

TITLE: Apparatus for Determination of Heat Flux (Pribor dlya opredeleniya teplovykh potokov)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Geofizicheskaya, 1958, Nr 11, pp 1351-1359 (USSR)

ABSTRACT: The apparatus described enables thermal flux (and hence conductivity) to be determined by means of temperature measurements on a slab of the material under investigation to which a sinusoidally varying heat source is applied. The temperature t at a depth z in the slab is made to

 $t = t_0 \cos \omega \tau \tag{1}$

where τ is time and $\omega=2\pi/T$, and where T is the period. The principle of the method is to measure the heat fluxes Q_1 and Q_2 at depths z and $z+\delta$ respectively. These heat fluxes are given by the following expressions:

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sov/ 49-58-11-8/18

Apparatus for Determination of Heat Flux $Q_1 = t_0 \sqrt{\frac{2\pi}{m}} \sqrt{\lambda c \theta} \exp \left(\sqrt{\pi} \right) \sqrt{2\pi}$

$$Q_{1} = t_{0} \sqrt{\frac{2\eta}{T}} \sqrt{\lambda c} e^{-\frac{1}{2} \ln z} \cos \left(\frac{2\pi}{T} - \sqrt{\frac{1}{2}} z + \frac{1}{4} \right)$$
(2)

$$Q_2 = t_0 \sqrt{\frac{2\Pi}{T}} \sqrt{\lambda c \rho} \exp \left(-\sqrt{\frac{17}{aT}} \frac{1}{z+\delta}\right) \cos \left\{\frac{2\pi \tau}{T} - \sqrt{\frac{17}{aT}} \frac{1}{z+\delta} + \frac{17}{4}\right\}$$
(3)

Here λ is the coefficient of thermal conductivity (to be determined), ρ is density and the other symbols have their standard significance. In a typical experimental arrangement z would be about 30 cm and 6 some 25 or 30 mm. The heat fluxes are measured in a suitably constructed and calibrated calorimeter in which the temperature difference across the slab is measured by means of a thermopile. Details of the construction of the calorimeter are illustrated diagrammatically and there is also a photograph the calibration of the apparatus, and another section to discussing experimental errors. The calibration is

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SOV/ 49-58-11-8/18

Apparatus for Determination of Heat Flux

effected by measurements on a sample of known thermal conductivity. Experimental errors are kept to a minimum by suitable insulation and thermostatically controlled cooling of the surfaces; end effects are eliminated by a differential technique. The apparatus provides a simple, quick and reasonably accurate (about 1%) method of measuring heat flux across thin layers of poorly conducting

There are 8 figures and 1 reference, which is Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet imeni M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: February 27, 1957

Card 3/3

SOV/ 49-58-12-5/17

AUTHORS: Kolesnikov, A. G. and Speranskaya, A. A.

TITE: Diurnal Variation of Temperature of Water in Cisterns and Rate of Thawing of the Lowest Surface of the Ice Cover in the Spring (Sutochnyy khod temperatury vody i skorost' staivaniya ledyanogo pokrova snizu na vodokhranilishchakh v vesenniy period)

PERFODICAL: Izvestiya akademii nauk SSSR, seriya geofizicheskaya, 1958, Nr 12, pp 1463-1469 (USSR)

ABSTRACT: In order that the investigation of water temperature should give the true results, the meteorological data affecting its diurnal variations should be known. The absorption of solar radiation by the ice cover can be defined from the expression Eq.(1) (Ref.1). Fig.1 shows this absorption as a rate of 1.6 m⁻¹. The decrease of solar radiation with depth can be defined as the function (2), where I(τ) - the total thermal effect of the solar spectrum, A - albedo of ice cover, p - coefficient showing which part of the solar energy reaches a given depth, β - total coefficient of decrease

Card 1/4

SOV/ 49-58-12-5/17

Diurnal Variation of Temperature of Water in Cisterns and Rate of Thawing of the Lowest Surface of the Ice Cover in the Spring

of solar energy with depth, τ - time. The total thermal effect of the solar spectrum can be defined as the function (3), while the rate of heat conduction in water can be calculated from Eq. (4) where t - deviation of water temperature from its mean, k - coefficient of turbulent heat exchange, $\omega = 2 \text{M/T}$, τ - period (1 day), c and ρ -heat capacity and density of water. When the conditions (5) and (6) are applied, the solution of Eq.(4) will take the form (7). The Eq.(8) for substituted for Eq.(4) Then the function $v(\tau)$ will take the form $v(\tau)$ will expect the function $v(\tau)$ will take the function $v(\tau)$ will the determination of $v(\tau)$ can be found when the Eq.(/) is substituted for Eq.(4). Then the function $V(z, \tau)$ will describe the Eq.(9) if the conditions (10) are satisfied. The solution of the Eq.(9) will take the form Eq.(11). By substituting Eq.(11) and Eq.(8) for Eq.(7), the expression which describes the deviation of water tames (12) is found, which describes the deviation of water temperature from its mean value. In order to compare the theoretical calculations with the experimental data, the Eq. (12) should be written in the form Eqs. (13) and (14). To determine the various values of the expression (13) a series of experimentaions was carried out. Some results are shown in the form of graphs representing the data taken from a water

Card 2/4

SOV/ 49-58-12-5/17

Diumal Variation of Temperature of Water in Cisterns and Rate of Thawing of the Lowest Surface of the Ice Cover in the Spring cistern during the night of April 11-12, 1954. Fig.2 shows the total solar radiation inside the ice cover (I) and reflected from its surface (II). Fig. 3 shows the heat exchange at the water-ice surface during the same period. The distribution of the temperature in the upper 2 m of water layer is shown in Fig.4, where 1 - temperature calculated from Eq.(13), 2 - the measured temperature. The Eq.(15) can be used for determination of the maximum value of the rate of thawing below the ice cover, where γ - latent heat of thawing ice, ρ_1 - ice density, ξ - thickness of ice, λ_1 heat conductivity of ice, t₁ - ice temperature. temperature of ice is near zero degrees, the expression (16) can be used. This expression, however, can be used only in the case of a rapid thaw at the rate of 5.5 mm per hour, Card 3/4

SOV/ 49-58-1 -5/17

Diurnal Variation of Temperature of Water in Cisterns and Rate of Thawing of the Lowest Surface of the Ice Cover in the Spring or higher. There are 4 figures and 4 Soviet references. ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosov Lomonosova (Moscow State University, imeni M. V. Lomonosov) SUBMITTED: February 27, 1957.

Card 4/4

S/124/60/000/006/015/039 A005/A001

Translation from: Referativnyy zhurnal, Mekhanika, 1960, No. 6, p. 113, # 7594

AUTHORS:

Kolesnikov, A.G., Pivovarov, A.A.

TITLE:

On the Correlation Between the Coefficients of Turbulence and Heat Exchange in the Atmospheric Layer Near the Sea Surface

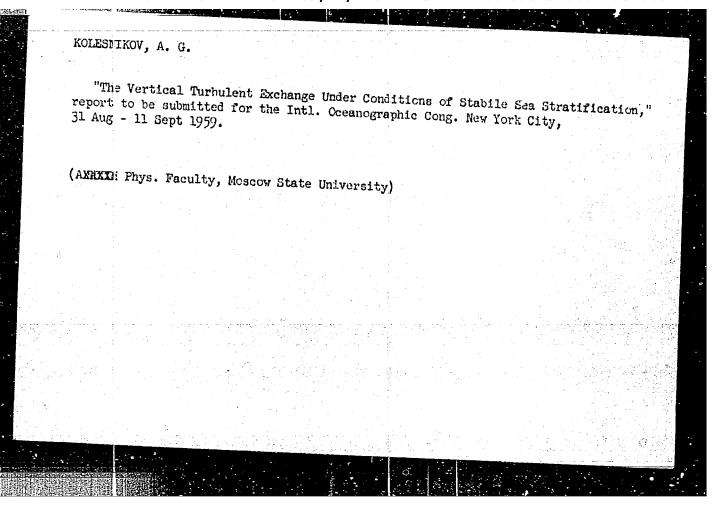
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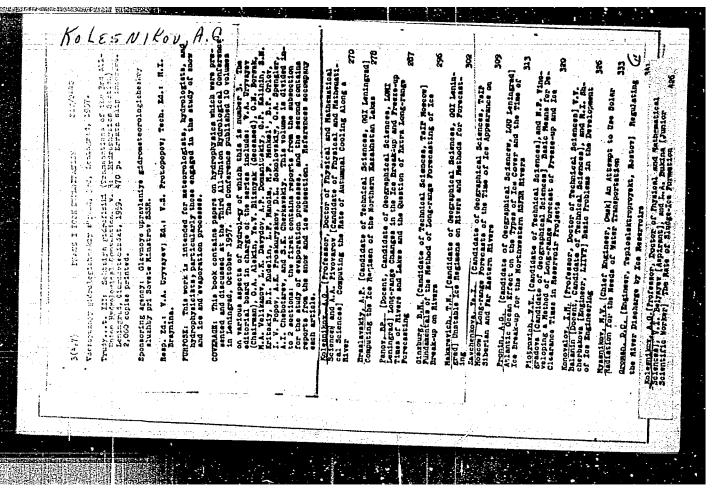
Tr. Morsk. gidrofiz. in-ta. AN SSSR, 1958, Vol. 13, pp. 65-72

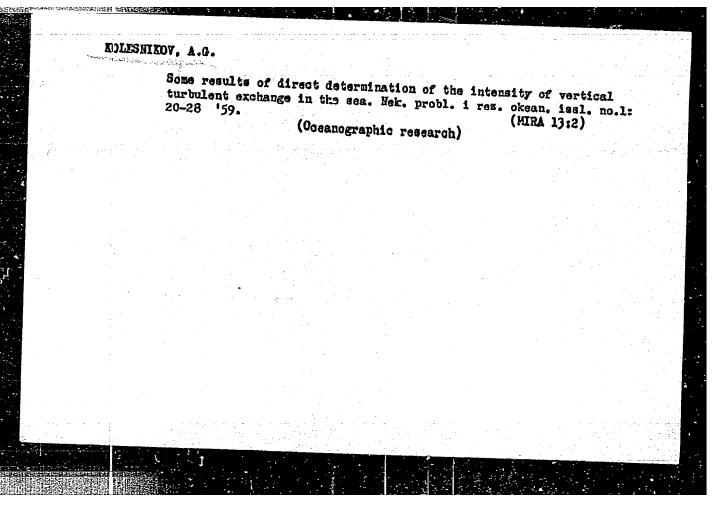
TEXT: The author considers two methods for determining the turbulent heat current through the sea surface. In the first variant, the heat current is adopted in the form:

 $Q = O'[t_1(0, T) - t_2(h, T)],$ where t₁ is the temperature at the sea surface, t₂ is the temperature of the air at the altitude h, & is the heat exchange coefficient. In the second variant, it is assumed

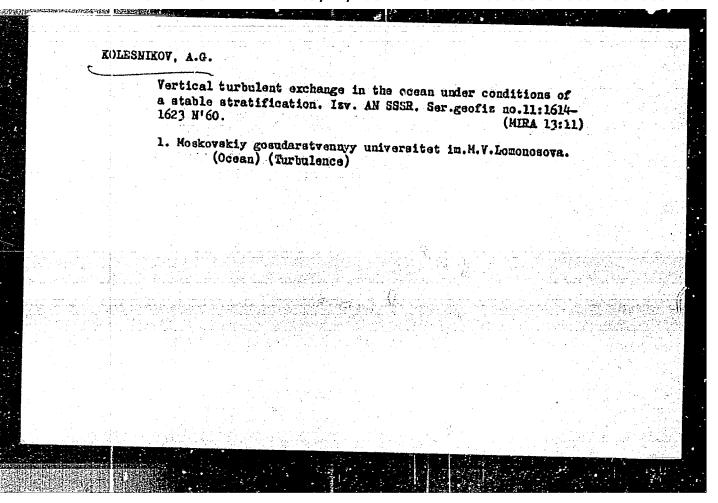
where c2, c2 are the heat capacity and density of the air, k2 is the turbulence The two methods mentioned are compared with each other with respect coefficient. Card 1/2

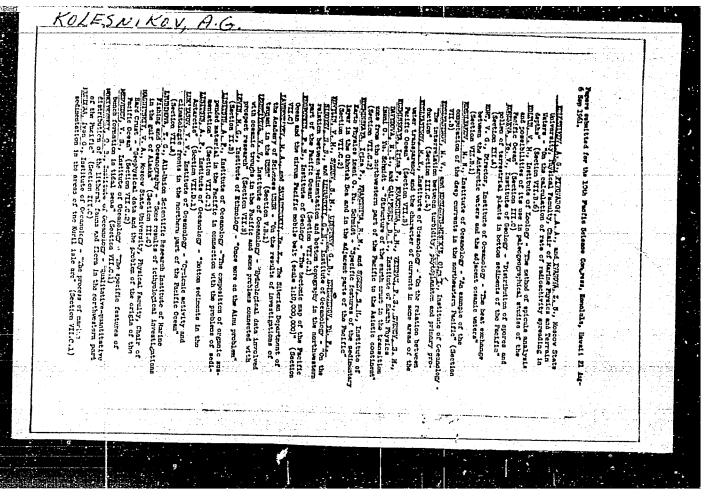






69790 5/055/59/000/06/17/027 B006/B005 10.40120 AUTHORS! Kolesnikov, A. G., Ivanov, V. W. TITLE: A Correlometer for Investigating the Structure of Turbulence of Hatural Water- and Air Flows Vostnik Koskovskogo universiteta. Seriya matematiki, mekhaniki, astronomii, fiziki, khimii, 1959, No. 6, pp. 146 - 149 TEXT: To solve problems of turbulent flows it is necessary to know the statistical characteristics of the fields(correlation coefficient, correlation = and structural functions, temperature, concentration, etc). Two types of so-called correlometers, automatically working devices, are used to record these characteristics. One type performs an automatic evaluation of the oscillograms, the other type an automatic computation of the required characteristics without a previous recording of field fluctuations. No standard device of the latter type is produced in industry at present. A correlemeter designed for automatic computation of statistical characteristics of turbulent fields in water- and air flows under natural conditions was worked out in 1957-1958 at the kafedra fiziki morya i wod sushi fizicheskogo fakul teta MGU (Chair of Physics of the Sea and Card 1/2





S/020/60/133/04/22/031 B019/B060

AUTHORS:

Kolesnikov, A. G., Belyayev, V. I.

TITLE

Calculation of the Shift of the Crystallization Front in

an Undercooled Cloud Under the Action of CO2

PERIODICAL:

Doklady Akademii nauk SSSR, 1960, Vol. 133, No. 4,

pp. 835-837

TEXT: It is assumed in first approximation that the propagation of crystallization in an undercooled cloud takes place like a diffusion of ice nuclei due to the action of CO2. Proceeding from this assumption, the authors had in a previous paper (Ref. 1) obtained the system (1) of differential equations for the calculation of this process. The authors discuss the density of the vapor sources (formulas (2) and (3)) and the radius of the droplets (formula (4)) and next, they adapt system (1) to results of observation. Crystallization in a cloud was found to take place in a narrow zone which divides the cloud into a crystallizing and a noncrystallizing part. An important part in this zone is played by sublimation, while the diffusion of vapor and of the droplets plays but

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Calculation of the Shift of the Crystallization 5/020/60/133/04/22/031 Front in an Undercooled Cloud Under the Action B019/B060 of CO

an unimportant part. For this case (1) is replaced by (5) which allows the distermination of the vapor concentration, the droplet size, and the average size of the ice crystals. Numerical calculations of the vapor concentration in a cloud, which is important for determining the concentration front of a cloud subjected to the action of solid CO2, revealed that the large drops and crystals play a decisive role for the vapor equilibrium, since the dependence of the vapor concentration on the radius can be neglected here. With the quick-operation computer "Strela" the authors made numerical calculations of the shift of the crystallization front as a function of the initial concentration of ice nuclei and of the turbulence coefficients, and, as a solution, the crystallization front was obtained as a function of time (Fig. 2). It is finally pointed out that no precise knowledge of the concentration of ice nuclei is so far available; the same holds for turbulence coefficients. By comparing the results obtained here with results obtained from the observation of the action of solid CO2 on undercooled clouds, it is possible to make an estimation of the abovementioned, little known quantities. There are 2 figures, 1 table, and 2 Soviet references.

Card 2/3

Calculation of the Shift of the Crystallization Front in an Undercooled Cloud Under the Action of CO₂

5/020/60/133/04/22/031 B019/B060

ASSOCIATION:

Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova

(Moscow State University imeni M. V. Lomonosov)

PRESENTED:

February 15, 1960, by V. V. Shuleykin, Academician

SUBMITTED:

December 14, 1959

Card 3/3

3.5900

S/169/62/000/011/022/077 D228/D307

AUTHORS:

Kolesnikov, A.G. and Belyayev, V.I.

TITLE:

Methods of estimating the crystallization of super-cooled clouds under artificial influence

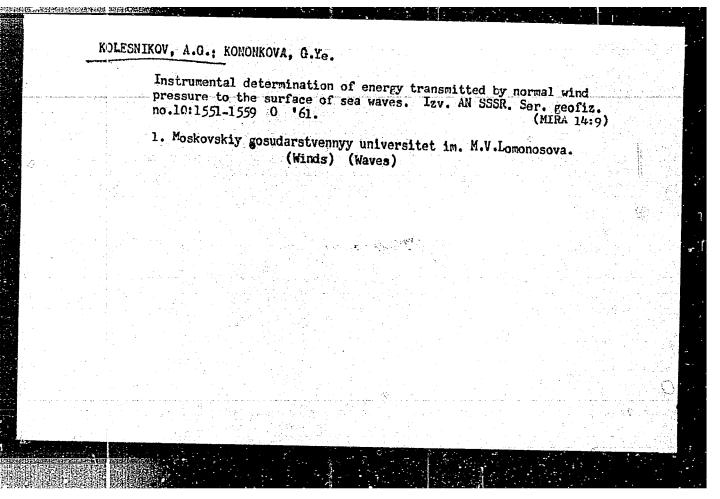
PERIODICAL:

Referativnyy zhurnal, Geofizika, no. 11, 1962, 30, abstract 11B190 (In collection: Issled. oblakov, osadkov i grozovogo elektrichestva, M., AN SSSR, 1961, 10-15)

TEXT: The results of work (RZhGeofiz, no. 1, 1960, 861) are reviewed, and it is shown that they can be extended to the case of a cloud which is polydispersed at the initial moment of time.

Abstracter's note: Complete translation

Card 1/1



32702

\$/049/61/000/012/006/009 \$\frac{1}{9}\big(0)\$
\$\D207/\D303\$

AUTHORS:

Belyayev, V.I., Gayvoronskiy, I.I., Kolesnikov, A.G.

and Krasnovskaya, L.I.

TITLE:

Propagation of crystallization in supercooled clouds

on introduction of solid carbon dioxide

PERTODICAL:

Akademiya nauk SSSR. Izvestiya. Seriya geofiziches-

kaya, no. 12, 1961, 1844 - 1851

TEXT: The paper reports experimental work on dispersal of clouds by seeding with CO₂, carried out by I.I. Gayvoronskiy and L.I. Krasnovskaya; the experimental results are compared with theoretical relationships derived by the other two authors (A.G. Kolesnikov and V.I. Belyayev). Experiments were carried out during autumn and winter of 1956 - 7 at the Tsentral naya aerologicheskaya observatoriya (Central Aerological observatory) using aircraft of the JIM -2 (LI-2) type. The aircraft flew in a straight line over clouds of St and Sc type which were not thicker than 500 m and whose temperatures at the top

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32702 S/049/61/000/012/006/009 Propagation of crystallization .. D207/D303

did not exceed -4°C. The clouds were seeded with solid CO2 granules of 0.5 - 1 cm diameter. The atmospheric pressure, relative humidity and air temperature were measured during seeding with an aircraft meteorological instrument C M-43 (SM-43). Samples of the clouds were taken and examined microscopically. The amount of condensed water in the clouds was measured by Zaytsev's method [Abstractor's note: No details given]. The wind velocity was determined using a technique developed at the Gosudarstvennyy nauchno-issledovatel'skiy institut Grazhdanskogo Vozdushnogo Flota (State Scientific Research Institute of the Civil Air Fleet). After seeding, the aircraft flew above the clouds measuring the expansion of the cloudless zone produced by CO2; this was continued until the cloudless zone filled again with clouds. Each experiment in air was preceded by soundings of the clouds from the ground. The results are presented in the form of the dependence (gradual increase) of the cloudless zone width, D, on time, T, which represents propagation of a crystallization front in a cloud. The experimental curves were compared with the theory developed in 1958 by

Card 2/ 4

32702

S/049/61/000/012/006/009 D207/D303

Propagation of crystallization ...

A.G. Kolesnikov and V.I. Belyayev (Ref.4: Nauchn. wokl. vyssh. shkoly, fiz. mat. nauk, no. 4, 1958). The theory assumes that the process of propagation of a crystallization front in a supercooled cloud can be reduced to turbulent diffusion of ice nuclei produced by solid CO₂ and distillation of water from drops to crystals. For simplicity a cloud is assumed to be bounded by planes of infinite extent in horizontal directions. The cloud is also assumed to consist initially of droplets and particles all of the same size; appearance of particles of various sizes after seeding is allowed for. The theoretical and experimental curves showing D(T) agreed satisfactorily, even quantitatively. The agreement indicated that crystallization fronts are very narrow and that their propagation is governed primarily by the turbulent diffusion coefficient K (dimensions cm² sec⁻²) and, to a lesser extent, by E which is the density of ice nuclei (dimensions cm⁻²) induced by CO₂. There are 4 figures and 4 Soviet-bloc references.

ASSOCIATION:

Institut prikladnoy geofiziki, Akademiya nauk SSSR (Institute of Applied Geophysics, Academy of Sciences, USSR)

Card 3/4

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		Effect of stability on the intensity of vertical transport in the Atlantic Ocean. Okeanologiia 1 no.4:592-599 '61. (MIRA-14:11)
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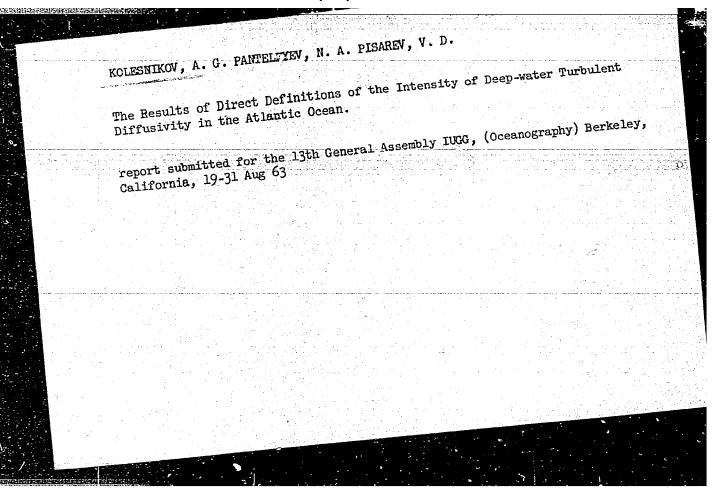
AUTHOR: Kolesnikov, A.G.

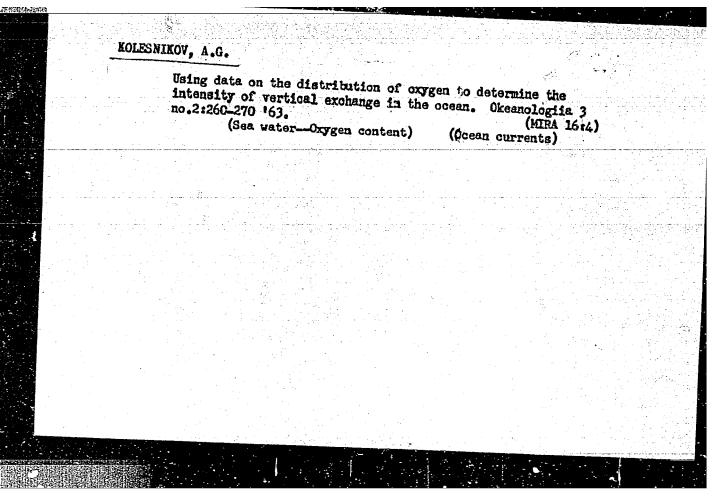
TITLE: Principal scientific results of the sixth voyage of
"M. Lomonosov"

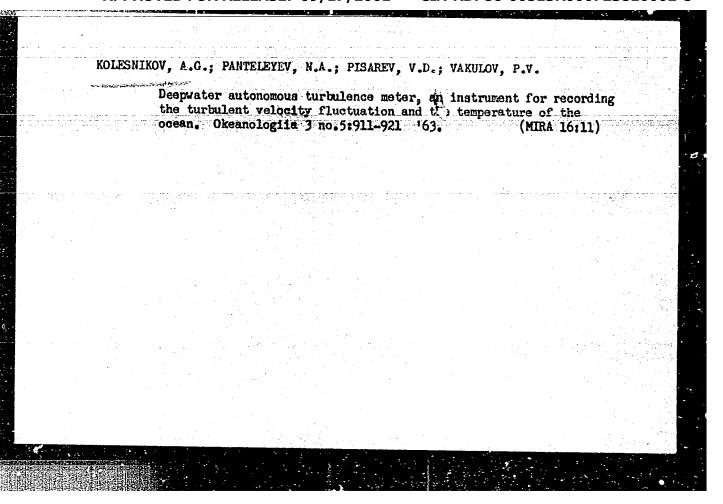
periodical: Referativnyy zhurnal, Geofizika, no. 8, 1962, 5, abstract 8V14. (Tr.: Morsk. gidrofiz. in-ta AN SSSR, no. 25, 1962, 5 - 16)

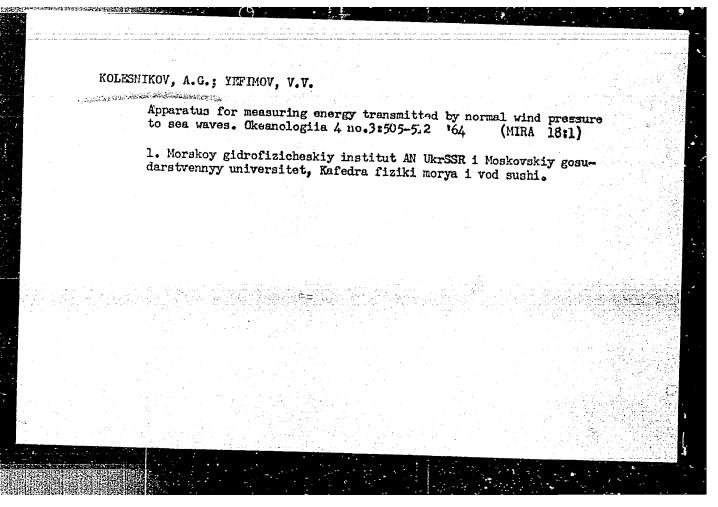
TEXT: The voyage took place during August - November, 1959 in the regions of the North Atlantic between 45 and 14 N.

Together with standard observations, a large number of observations were made using non-standard instruments (particularly in connection with the measurement of water and air temperature). The main results of the voyage were as follows: 1) all the data comprising the heat-balance were obtained; 2) approximate fluctuations of temperatures on the surface of the ocean were established (the dimensions of temperature heterogeneities with highest repetition were found in the North Atlantic 20 - 30 miles, in the regions of the Gulf Stream 6 - 8 miles and in the Card 1/2

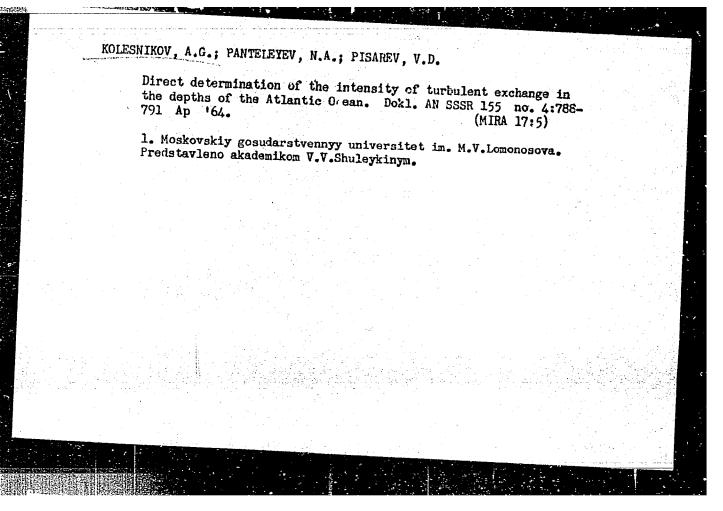








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KOLESNIKOV, A.G., doktor fiz.-mat. nauk, otv. red.; SKOPINTSEV,
B.A., doktor khim. nauk, otv. red.; KULAKOVSKAYA, N.S.,
red.

[Hydrophysical and hydrochemical studies; an interdepartmental Republic-wide collection] Gidrofizicheskie i gidrokhimicheskie issledovaniia; mezhvedomstvennyi respublikanskii sbornik. Kiev, Naukova dumka, 1965. 137 p.

1. Akademiya nauk URSR, Kiev.

(MIRA 18:5)

L 15248-66 EWT(1) GY ICC WR: AP6001976 (N)

SOURCE CODE: UR/0362/65/001/012/1310/1318

nolesnikov, A. G.; Panteleyev, N. A.; Ivanov, V. N.

ORG: Academy of Sciences, UkrSSR, Marine Hydrophysics Institute Akademiya nauk

Infine: Experimental studies of the turbulent drag layer under a drifting ice

SOURCE: AN SESR. Izvestiya. Fisika atmosfery i okeana, v. 1, no. 12, 1965,

TOPIC TAGS: ice, turbulence meter, turbulent boundary layer effect, turbulent diffusion, turbulent flow, drag effect, energy dissipation, boundary layer turbulence, boundary layer structure / TM-1, turbulimeter

ABSTRACT: The turbulent layer of water dragged along by drifting ice was studied in the spring and summer of 1956 in the Arctic Ocean. The flow velocities were reasured with a TM-1 turbulimeter mounted in a cole 100 m from the edge of a reasured was a worth Pole-4." The horizontal and vertical velocities were continuously recorded at various depths (z) beneath the ice.

L 15248-66 ACC NR: AP6001976

At $z \ge 0$ (which is a function of drift speeds) turbulence has no effect. The profile of the average flow velocity vs z, plotted in relative coordinates, showed the same logarithmic curve for all series of measurements. Tangential friction stress was strongly dependent on the drift speed, and rapidly increased with decreasing z. The maximum values of this quantity were not obtained because the measurements were not made immediately adjacent to ice. The turbulent structure was compared to the turbulent structure in a uniform boundary layer along a wall. Although similar, the turbulence decreased more rapidly under the ice of the energy dissipation also fell off more sharply. This was attributed to the nonuniform density of the water caused by the fresh water furnished by the ance in the measurements and analysis. Orig. art. has: 8 figures, 1 table, and

SUB CODE: 08/ SUBM DATE: 25Uan65/ ORIG REF: G03/ OTH REF: OOL

Card 2/2 BC

ACC NR. AT6035083

N SOURCE CODE: UR/3095/66/035/000/0003/0012

AUTHORS: Kolesnikov, A. G.: Isayev, I. L.; Isayeva, L. S.; Naumenko, M. F.; Chigrakov, K. I.; Shutov, A. P.

ORG: none

TITLE: The macrostructure of the temperature field on the cean surface

SOURCE: AN UkrSSR. Morskoy gidrofizicheskiy institut. Trudy, v. 35, 1966. Gidrofizicheskiye i gidrokhimicheskiye issledovaniya tropicheskoy zony Atlantiki (Hydrophysical and hydrochemical research in the tropical zone of the Atlantic), 3-12

TOPIC TAGS: temperature distribution, ocean dynamics, research ship

ABSTRACT: The purpose of this paper is to investigate the temperature field of the ocean surface—the interface between hydrosphere and atmosphere over the ocean. This temperature field is a function of the intensity of vertical heat exchange in both media, the transfer of heat by ocean currents and winds, and also of "boundary" turbulence associated with the specific characteristics of the interface. Data for this study were obtained by making continuous records of the temperature of the surface water during passage of the Russian research ship Mikhail Lomonosov. A thermistor device was used, and the record was made by means of a self-recording EPP-09 potentiometer. Inertial lag in the record amounted to 0.3 sec. Analysis of curves of spectral density (drawn for three ceanic traverses) shows that the Cord1/2

ACC NR. AT6035083

dependence of the spectral density on wave number follows the "5/3 law" rather well, both for the open ocean and for near-shore zones, but the relation is not smoothly rectilinear. The spectra display a series of maximums, reflecting secondary sources acting at fixed intervals of wave numbers. These are related to dynamics of the water as a result of vortical movements and thermally induced changes (from invading currents, rise of water from depth, cloudiness that causes irregular heating by solar radiation, interaction of atmospheric fronts, etc). The actual spectral density of temperature fluctuations for the open ocean is approximately one order less than for the near-shore parts of the ocean. In the middle-scale region (of wave numbers), a minimum of spectral density occurs, characteristic of a number of meteorological elements such as heat flux, air temperature, wind velocity, and pressure. Orig. art. has: 3 figures and 4 formulas.

SUB CODE: 08/

SUBM DATE: none/

ORIG REF: OO4/

OTH REF: COL

Card 2/2

	T6023553	(N)			66/036/000/0015	/0025
UTHOR:	Kolesnikov, A.	G.; Panteleyev	. N. A.; Aret	inskiy, G. Yu.	; Dykman, V. Z.	
RG: No	one					
ITLE: erature	Apparatus for a	neasuring the tu n depths	ırbulent pulsa	tions of curre	nt speed and te	a-
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